Steven L. Beshear
Governor

Leonard K. Peters
Secretary

Energy and Environment Cabinet
Department for Environmental Protection
Division of Water
300 Fair Oaks Lane
Frankfort, Kentucky 40601
Phone: (502) 564-2150
www.dep.ky.gov

R. Bruce Scott
Commissioner

DEC 30 2009

AMENDED STATE PLANNING AND ENVIRONMENTAL ASSESSMENT REPORT (SPEAR)

Regional Facilities Plan
City of Sadieville, Scott County Kentucky
AI 3922; PLN20060001

A facility plan for the City of Sadieville titled *Wastewater Facilities Plan Update Sadieville Collection and Treatment Systems* (May 2003, Revised July 2003) was approved on May 6, 2005 based on the State Planning and Environmental Assessment Report (SPEAR). The city of Sadieville has submitted a document titled *Facilities Plan Amendment* (November, 2006) for approval by the Energy and Environment Cabinet (EEC). In accordance with KRS Chapter 224 and 401 KAR 5:006, the Department for Environmental Protection (DEP) has prepared a State Planning and Environmental Assessment Report (SPEAR) that summarizes the regional facility plan.

The DEP is required to conduct reviews of the potential environmental impacts of projects applying for funding by the Clean Water State Revolving Fund in accordance with the procedures contained in the State Revolving Fund Operating Agreement between the Environmental Protection Agency Region IV and the Commonwealth of Kentucky. The DEP has included this required review in the attached SPEAR. The DEP has determined that the projects in the SPEAR will not have a significant effect on the environment when all mitigative measures in Section F of the SPEAR are implemented.

The SPEAR contains information supporting this determination in the following sections: A) Project Summary; B) Existing Environment; C) Existing Wastewater Facilities; D) Need for Project; E) Alternatives Analysis; F) Environmental Consequences, Mitigative Measures; G) Public Participation and User Rates; and H) Sources Consulted.

Interested persons are encouraged to submit comments on this SPEAR within 40 days of the above date. The EEC will take no action on this project until after the State Clearinghouse review and public comment period has ended, and will evaluate all comments before a decision is made to proceed with approval of the Regional Facilities Plan or awarding of SRF funds for this project. Send comments to Ms. Anshu Singh, Supervisor, Wastewater Planning Section, Water Infrastructure Branch, Division of Water, 200 Fair Oaks 4th Floor, Frankfort, Kentucky 40601, or by e-mail to anshu.singh@ky.gov, or call her at (502) 564-3410, extension 4805.

Sincerely,

Valerie A. Hudson

for R. Bruce Scott, Commissioner
Department for Environmental Protection

RBS/AS

AMENDED STATE PLANNING AND ENVIRONMENTAL ASSESSMENT REPORT (SPEAR)
City of Sadieville, Scott County, Kentucky
AI#3922; PLN20060001

DEC 30 2009

A. Project Summary and Funding Status

Project Summary: On May 6, 2005, the Department for Environmental Protection (DEP) approved the City of Sadieville's facility plan update of May 2003 (Revised July 2003), in which the city proposed installation of a new 60,000 gallons per day (gpd) Dual-Path extended aeration package wastewater treatment plant (WWTP) as the selected treatment alternative to meet the current and future wastewater needs. The city submitted a Facilities Plan Amendment on November 3, 2006, proposing a modification to the selected wastewater treatment alternative. The City of Sadieville would like to opt for the regionalization option instead of expanding the capacity of the existing WWTP (Figure II-11). Initially, this alternative was eliminated because of high-capital costs, indeterminable land acquisition rights cost, significant operation and maintenance costs, and on-going costs for treatment at the Georgetown WWTP #2. However, the city of Georgetown recently made plans to extend their sewer collection system out to the Double Culvert Road Landfill, bringing the point of connection between Sadieville and Georgetown 7.5 miles closer, thus solving some of the issues of land acquisition right costs and lowering the cost of this alternative. The city will decommission its WWTP and enter into a Kentucky Inter-Municipal Operating Permit (KIMOP) with the City of Georgetown. The City of Sadieville will retain the ownership of its collection system. The initial cost of construction is estimated to be $1,183,875 and the annual operation and maintenance cost is estimated to be $50,793.

The engineering firm that prepared the facilities plan amendment is HMB, Inc. The project is located in the Bluegrass Area Development District and within the area covered by the Frankfort Regional Office.

Funding Status: The city of Sadieville is seeking funds from the Housing and Urban Development (HUD), CDBG, and other funding agencies to fund the project.

B. Existing Environment

Topography: The planning area is located in the northeast portion of Scott County that is located in the Bluegrass Physiographic Region of the state. The planning area can be described as moderately to sharply sloping, rolling land with steep ridges and triangular valleys. Surface elevation ranges from a low of approximately 740 feet above mean sea level (amsl) along Eagle Creek near U.S. Route 25 in the northwest corner to a high of approximately 950 feet amsl along Route 25 in the southwest corner of the planning area. The flattest, most readily buildable ridge tops are generally in the elevation range of 850-940 feet amsl.

Soils: The predominant soils in the planning area belong to the Eden Association. These soils are derived from limestone, siltstone and soft calcareous shales. They are moderately deep, well-

drained, somewhat droughty soils. Eden soils exhibit severe engineering limitation for development of dwelling, septic tank/absorption field systems, sewage lagoons, streets, underground utilities and other shallow excavations due to slow permeability, steep slopes, poor drainage, flooding and ripable rock at shallow (1 ½ to 3 ½ feet) depth. Limited Nolin Silt Loam and Cynthiana-Rock outcrop complex soils exist in and along the primary drainage ways within the planning area.

Geology: The planning area is underlain by consolidated sedimentary rocks of the Middle Ordovician Age originating in the deposition of marine sediments from the vast inland sea that covered Kentucky at that time. These rocks are composed of thin-bedded limestones, with shale partings and interbedded shales, and siltstone. In the planning area there are two cap rock areas: the Tanglewood Formation on the higher elevations, usually above 850 feet amsl, and the Lexington Group below that elevation

Surface Waters: The planning area is located within the Kentucky River Basin Management Unit and the Lytles Fork, Eagle Creek headwaters watershed. The planning area is drained by portions of Eagle Creek, Little Eagle Creek, Straight Fork, and Hall Branch. A majority of the surface water drainage that occurs within the planning area flows towards the Eagle Creek.

A majority of the designated uses of the surface water segments within the planning have not been assessed. The only designated use assessment is a segment of Hall Branch that lies just northeast of the planning area, as listed in the *2008 Integrated Report to Congress on the Water Quality in Kentucky*. The segment assessed as meeting the designated use is detailed in Table 1.

Table 1 Assessed Segments Supporting Designated Use(s) (source: 2008 Integrated Report)

Waterbody & Segment	Fully Supported Designated Use(s)
Hall Branch 0.7 to 1.2	Warmwater Aquatic Habitat

The planning area is not within a DOW priority watershed but is within a region characterized as having moderate groundwater sensitivity.

Kentucky-American Water Company provides water to the planning area.

Groundwater: The hydrogeology of the limestone of the Ordivician series found here usually yields enough water from drilled wells for domestic use. The groundwater is generally available from openings in cavities along joints and bedding planes. In some instances a spring zone at and below the top of the limestone is formed due to the relatively insoluble upper portion the limestone formation. Water withdrawn from most wells in the area is suitable for domestic use but is hard and may contain excessive amounts of iron. Water from the springs is softer and contains less dissolved solids. Groundwater within the planning area is taken primarily from wells drilled in rock for low-yield domestic and livestock consumption. There is no industrial groundwater use. Records of groundwater quality in the area are limited. Installation of general wastewater collection system will reduce the potential for further contamination of the groundwater by septic tanks.

C. Existing Wastewater Facilities

Wastewater Treatment Plant: The City of Sadieville own and operates a 33,000 gpd secondary treatment package plant that discharges pursuant to Kentucky Pollutant Discharge Elimination System (KPDES) Permit No. KY0081868 to Eagle Creek at mile point 89.05. Initial settling and primary treatment is provided in individual septic tanks located on each contributor site, and then the effluent from the individual septic tanks is collected and conveyed to the WWTP. The plant was constructed in 1985 and consisted of a 50,000 gallon sedimentation/equalization tank, a 33,000 gpd pressure-dosed in-ground sand filter, and a chlorine effluent disinfection system. The sand filter was functionally-replaced in 1995 with a used 33,400 gpd extended aeration package plant, chlorination/dechlorination equipment, and a cascade step aerator, which are currently in service. Excess sludge is pumped and trucked (wet) to the City of Cynthiana WWTP.

The plant does not provide redundancy, or even parallel path operation, so it cannot be taken out of service for proper inspection and preventative maintenance without by-passing untreated wastewater. While the WWTP appears to be adequate to handle the current wastewater flow without bypassing, it is nearing the end of its service life. The existing influent flow measurement system has longstanding problems causing uncertainty as to the actual daily volume of flow being handled by the existing system. The annual average flow rate from September 2008 to August 2009 was 20,000 gpd.

The monthly average discharge limits for the existing WWTP are as follows:

Parameter	Limit
BOD_5	10 mg/l
Total Suspended Solids	30 mg/l
E. coli	130 colonies/100 ml
Ammonia-Nitrogen	2 mg/l (summer)/10 mg/l (winter)
Dissolved Oxygen	Not less than 7 mg/l
Total Residual Chlorine	0.011
Total Phosphorus	Report
Total Nitrogen	Report

Collection System: An innovative, small-diameter gravity effluent collection system, used in conjunction with individual septic tanks for solids removal at each service connection, was installed in 1985-86. This system included three duplex, wet-well effluent lift stations, approximately 1,835 linear feet (LF) of 1½-inch and 2-inch diameter force mains, and approximately 12,100 LF of 4-inch diameter gravity mains. The collection system initially served only the Sadieville urban service area, but was extended in 1995 to add a fourth effluent lift station, 1,268 LF of 4-inch diameter force main, and approximately 3,500 LF of 4-inch and 6-inch diameter gravity mains to serve the first phase of Eagle Bend Subdivision at the west side of the original service area. The sewers are constructed of modern polyvinyl/chloride (PVC) sewer pipe.

The Sadieville collection system is divided into four distinct collection zones or sub-areas: Northern Zone, Northwestern Zone, Primary Collection Zone, and Eagle Bend Subdivision. Three of these zones are defined by gravity sewers draining to lift stations (Lift Stations 1, 2, and 4), which then pump effluent to the other zone (Primary Collection Zone) which includes all gravity sewers that drain directly to the treatment plant. Lift Station 3 does not currently have any contributing sewage and pumps only infiltration water through a 1½-inch diameter force main to the Primary Collection Zone.

The small-diameter, gravity effluent-collection system installed in the City of Sadieville was quite popular as an innovative, cost saving approach at the time of construction in early 1980s, but it is now plagued with inflow/infiltration (I/I) and a recurring widespread random odor problem. Inspection and maintenance is provided by the City only on an "as-needed" basis as reported by the individual lot owners.

There are no planned or authorized combined sewers in Sadieville. All known sanitary sewer piping and storm sewer piping are separated with no known cross-connections.

D. Need for Proposed Facilities

Population in the planning area is projected to increase from 443 in year 2000 to 792 in year 2025. Residential, commercial, and industrial growth are expected to increase wastewater flows from the current estimated 27,000 gpd average flow and 73,000 gpd peak flow to a 20-year projection of 85,000 gpd average flow and 182,000 gpd peak flow in 2025. In addition age has taken its toll on the existing facilities and it would be costly to replace what is needed and still maintain the level of treatment necessary to comply with the discharge permit limits. Decommissioning the aged WWTP and regionalization will help to the City of Sadieville to meet the future wastewater needs. In addition, it will improve the water quality of the local streams.

E. Alternatives Analysis

Wastewater Treatment Alternatives:

Alternative No. 1 – No Action: The no-action alternative consists of the continued use, maintenance and operation of the existing WWTP without modification. But the existing plant has outlived its useful life; does not have sufficient capacity to meet the future wastewater needs and poses a risk of deteriorating the water quality of local streams. The "No Action" alternative could result in the eventual degradation of surface water. As a result, the no-action alternative was eliminated from further consideration.

Alternatives No. 2 – Extended Aeration Package Plant (EAPP) System: This alternative involves replacement of the existing WWTP with a dual-path 60,000 gpd (150,000 gpd peak flow) EAPP constructed in Phase 1 on the existing plant site and a third 30,000 gpd cell to be added in Phase 3 when/if additional capacity becomes necessary. The design includes piping and

electrical provisions to readily add the third cell to provide a total design capacity of 90,000 gpd (225,000 gpd peak flow).

Some of the existing equipment which will be reused includes the plant headworks structure including inflow channel; 50,000 gallon flow equalization chamber; office/laboratory building; emergency power generator; cascade aeration ladder outfall; and effluent outlet. The new facilities will also include new primary influent pumps; steel dual-flow-path EAPP system with integral aeration chambers, clarifiers, and aerobic digesters; flow control box with manually cleaned bar screen and auto-reversing comminutor at the plant inlet; and a UV disinfection system. Effluent will be discharged to Eagle Creek using the existing outfall. Excess sludge will continue to be pumped and trucked (wet) to the City of Cynthiana WWTP for disposal.

The monthly average discharge limits for the new WWTP are as follows:

Parameter	Discharge Limit
BOD5	10 mg/l
Total Suspended Solids	30 mg/l
Fecal Coliform	200 colonies/100 ml
Ammonia-Nitrogen	2 mg/l (summer)/6 mg/l (winter)
Dissolved Oxygen	Not less than 7 mg/l
pH	6-9
Reliability Classification	Grade 3

The initial construction cost is estimated at $1,193,500, and the annual O&M cost is estimated at $60,764. This was the selected alternative in the approved 2003 facility plan.

Alternative No. 3 - Pump to Georgetown WWTP #2: As an alternative to treatment at the existing plant site, pumping wastewater from the Sadieville planning area to the Georgetown WWTP #2 was considered. This will include construction of approximately 25,000 LF of 6-inch PVC force main, upgrades to the existing flow equalization chamber pumps at the current WWTP site, two new main pump stations, and a new pump at the WWTP. The existing 50,000-gallon flow equalization basin will be reused. The initial cost of construction is estimated to be $1,183,875 and the annual operation and maintenance (O&M) cost is estimated to be $50,793. **Alternative No. 3, is the most cost effective and environmentally sound, therefore, it is the selected alternative.**

F. Environmental Consequences and Mitigative Measures

Impacts on Historic Properties and Archeological Sites:
The Kentucky Heritage Council (KHC) commented in a letter dated July 31, 2009, that sewer lines within the existing right-of-way or previously disturbed areas do not require an archeological survey. However, new sewer lines not within the existing right-of-way as well as new lift stations must be surveyed by a professional archeologist to determine if any sites eligible for listing in the National Register for Historic Places will be affected by the proposed projects.

Where a given project area, or portions thereof, have been disturbed prior to construction, documentation of that disturbance must be filed with the State Historic Preservation Officer and an opinion concerning the need of an archeological survey must be requested.

Impacts on Threatened and Endangered Species:
The Kentucky Department of Fish and Wildlife Resources (KDFWR) commented in a letter dated May 27, 2009, that Kentucky Fish and Wildlife Information System indicates that no federal/state threatened and/or endangered fish and wildlife species are known to occur within close proximity to the project area.

The United States Fish and Wildlife Service (USFWS) commented in a letter dated February 4, 2009, that five federally listed species are known or have the potential to occur within Scott County, and could be affected by the proposed action. The listed species include Gray Bat (*Myotis grisescens*) Indiana Bat (*Myotis sodalis*), Clubshell mussel (*Pleurobema clava*), Globe bladderpod (*Lesquerella globosa*), and Running buffalo clover (*Trifolium stoloniferum*).

To avoid potential impact to the Indiana bats and gray bats population, the USFWS recommended following options:

1) Conduct a survey of the project area for suitable winter habitat (caves, rockshelters, abandoned underground mines) and agree to remove trees in the project area only between October 15 and March 31 in order to avoid impacting summer roosting bats
2) Conduct a biological survey of the project area to determine the presence or absence of the species within the project area, with coordination with USFWS on the survey plan and results; or
3) Provide USFWS with site-specific information that showed the there is no potentially suitable habitat within the project area or that the species would not be present in thin area due to site-specific factors.

To minimize impacts to the Clubshell mussel population, the USFWS recommended the following best management practices:

1) Proper placement of erosion control structures below highly disturbed area to minimize entry of silt to the stream;
2) The attachment of pipeline(s) to road bridges would avoid and minimize impacts to stream habitat and water quality. However, if the line(s) cannot be attached to road bridges, they should be installed using directional boring or aerially in order to minimize disturbance to the streams that are crossed.
3) Return all disturbed instream habitat to its original condition upon completion of construction in the area.

To avoid potential impact to Running buffalo clover, USFWS recommended survey of the project area to determine the presence or absence of buffalo clover within the project area by a qualified biologist and submission of the report to USFWS for review and approval. USFWS suggested minimizing the construction footprint to avoid naturally wooded areas where Globe bladderpod may occur. Complete avoidance of such areas is preferred. However, if this cannot be accomplished, then the project area should be surveyed by a qualified biologist to determine

presence or absence of this species within the project area.

A written acceptance of these recommendations must be submitted to USFWS office. However, if these recommendations cannot be incorporated then the project area must be surveyed to determine the presence or absence of the species within the project area in an effort to determine if potential impacts are likely. Surveys will not be necessary if sufficient site-specific information was available that showed that these is no potentially suitable habitat within the project area or its vicinity; or that the species would not be present within the project area or its vicinity due to site-specific factors.

Impacts on Streams:
The Kentucky Department of Fish and Wildlife Resources (KDFWR) recommended in a letter dated May 27, 2009, that erosion control measures be developed and utilized during construction to minimize siltation into nearby waterways.

Floodplain Issues:
A floodplain construction permit may be required from the DOW's Surface Water Permits Branch, Floodplain Management Section, if there are any disturbances in the 100-year floodplain.

Miscellaneous Impacts:
The environmental impact of constructing the proposed facilities includes those temporary impacts of noise, dust, and traffic disruption in the construction area. The proposed project will improve the surface water and groundwater quality over the next 20 years. This action also provides a planned development for the economic growth in the planning area.

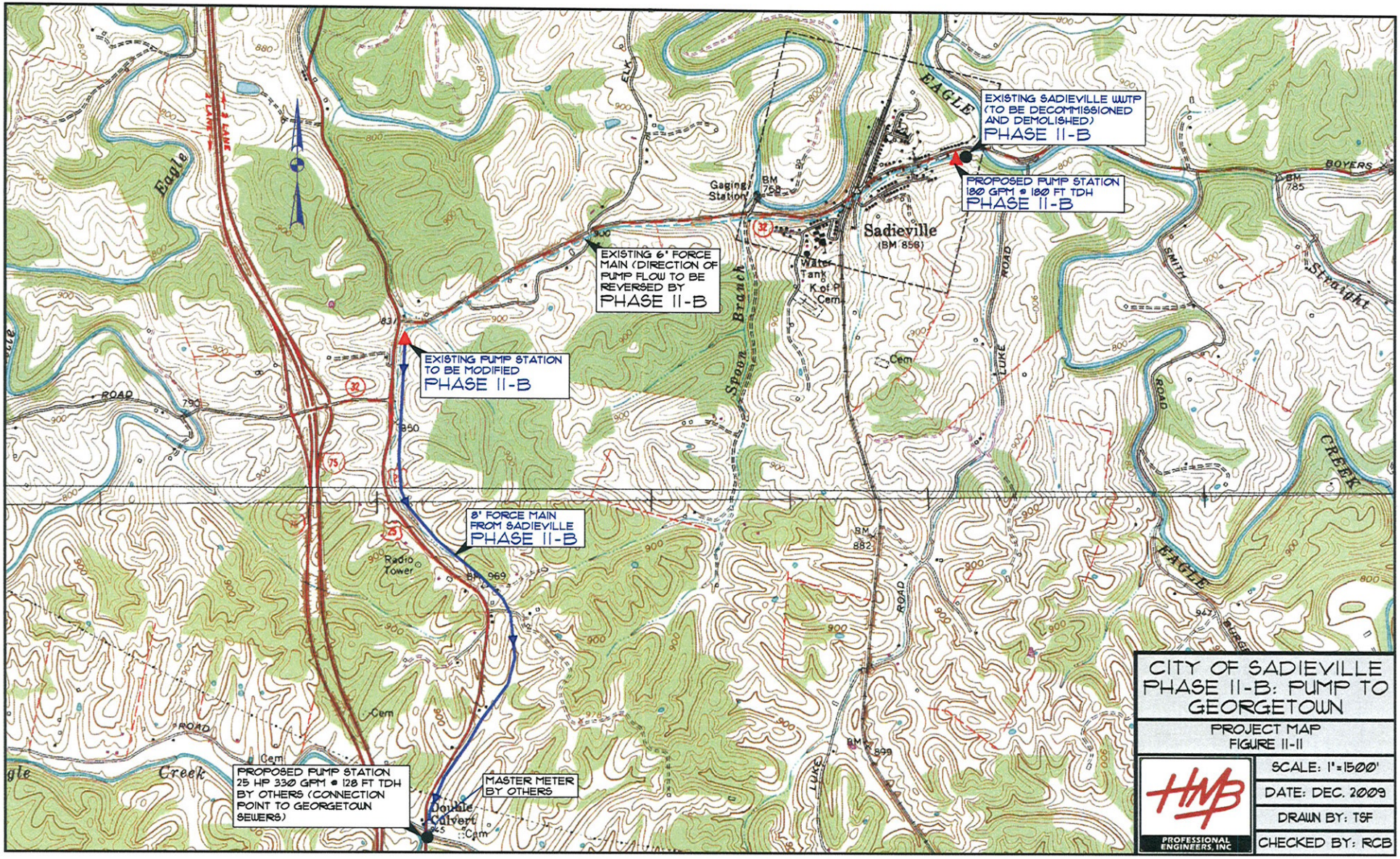
G. Public Participation and User Rates

A public meeting was held on September 28, 2009, to discuss the amendment. The meeting notice was published in the Georgetown News-Graphic on September 8, 2009. No adverse public comments were received. The Division of Water is not aware of any unresolved public objections that may have been voiced before or after the public meeting in relation to the proposed project. The current monthly sewer rate based on 4,000 gallons of usage is $19.95. The monthly rates are expected to increase to $32.

H. Sources Consulted

Kentucky Department of Fish & Wildlife Resources
Kentucky Division for Air Quality
Kentucky Division of Forestry
Kentucky Division of Waste Management
Kentucky Division of Water
Kentucky Heritage Council
Kentucky State Clearinghouse
Kentucky Transportation Cabinet

Natural Resources Conservation Service Web Soil Survey
Kentucky Geological Survey website
U.S. Fish & Wildlife Service
City of Sadieville
HMB, Inc.
Judge-Executive, Scott County
Bluegrass Area Development District



CITY OF SADIEVILLE PHASE II-B: PUMP TO GEORGETOWN

PROJECT MAP
FIGURE II-II

HMB PROFESSIONAL ENGINEERS, INC

SCALE: 1"=1500'
DATE: DEC. 2009
DRAWN BY: TSF
CHECKED BY: RCB